PATENT SPECIFICATION

755,226

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COMPLETE SPECIFICATION

Improvements in or relating to Metal Studs or the like for Attachment by Electric Arc Welding or Soldering

We, SVENSKA AKTIEBOLAGET GAS-ACCUMULATOR, of Lidingö, Sweden, a Swedish Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to metal studs, pins or the like (hereinafter referred to as studs), and is particularly concerned with improvements in studs for attachment by electric arc welding or soldering.

It has before been proposed to provide the end of a one-piece stud for attachment to a metal surface by electric arc welding with a central recess or with recesses of various forms for the reception of flux, said recess or recesses being sealed by means of a cap or the like.

The present invention has for its object to provide an improved stud for attachment to a metal surface by electric arc welding or soldering, whereby the necessity of providing a cap for retaining flux in the end portion of the stud may be obviated and so that, as there is no retaining cap or the like to be melted, the flux can flow out more readily when heated by the arc.

According to the present invention, a metal stud for attachment to a metal surface by electric arc welding or soldering is characterised in that the end portion of the stud has an end face of convex formation and is provided with a plurality of open recesses for accommodating flux said recesses being distributed over said face and being of comparatively small cross-section so as to be capable of retaining flux in the form of loose powder. The recesses may be in the form of small cavities distributed over the convex surface.

For attachment by electric arc soldering, the metal stud may comprise an end portion of metal having a lower melting point than that of the body of the stud, the convex end face being provided on said end portion. In this case the recesses may be provided by radially extending slots of the same axial dimension as the said end portion.

For attachment by electric arc welding, the stud may consist of a single piece of metal.

The invention is hereinafter described, by way of example, with reference to the accompanying diagrammatic drawings, in which:—

Fig. 1 is a part sectional side elevation illustrating one embodiment of metal stud according to the invention;

Fig. 2 is an end view corresponding to Fig. 1;

Fig. 3 is a view similar to Fig. 1 illustrating a modification; and

Fig. 4 is an end view corresponding to Fig. 3.

In carrying the invention into effect according to one embodiment, as shown in Figs. 1 and 2, a metal stud comprises a body portion 1 which may be formed of steel, iron, brass, aluminium or other light metal, and an end portion 2 of a metal having a lower melting point than that of the body portion, the end portion 2 being of a suitable soldering metal, such as brazing metal, silver solder, aluminium solder or the like. The end portion 2 has a convex end face 3 preferably of part-spherical form, in which end face a plurality of recesses 4 of small cross-section are provided.

Immediately before use, the end of the stud is dipped into flux in the form of a loose powder which penetrates into the recesses 4 and is retained therein owing to their small section. The stud is then inserted in a welding gun and the end portion 2 is brought into contact with the metal surface to which the stud is to be attached, the mid portion of the end face 3 forming the contact area. On an electric arc being formed

between the contact area of the stud and the metal surface when current is applied, the flux is melted and, owing to the absence of a sealing cap, is able to flow swiftly and without obstruction to the melt formed by the end portion of the stud and which, on solidification, attaches the stud to the metal surface by soldering.

The stud shown in Fig. 1 is suitable for attaching to a metal surface to project therefrom, the end portion 2 being of relatively small dimension axially and only a small amount of flux, which can be accommodated in the relatively shallow recesses 4, being required.

Figs. 3 and 4 illustrate one embodiment of stud adapted to be attached by soldering, not only to a surface perpendicular to the stud, but also to the wall of an aperture surrounding at least part of the body portion 1 of the stud. For this purpose it is necessary to provide the end portion 2 of relatively great axial length to supply sufficient metal for forming the soldered union at the end of the stud and between it and the wall of the aperture. It is also necessary to provide for the accommodation of a greater quantity of flux. As shown, radially disposed recesses 5 extend the entire axial length of the end portion 2, the recesses 5 being comparatively deep radially but small enough in cross-section to retain loose flux securely. The recesses 5 extend as far as the convex end face 3 of the end portion 2 so that the flux can easily flow out over the end face 3 when heated by an electric arc.

The studs described with reference to Figs. 1 to 4 are intended for attachment by electric arc soldering. If desired, however, the end portion 2 of soldering metal can be omitted, in which case the studs are suitable for attachment by electric arc welding. Single-piece studs without any end portion of soldering metal are provided with recesses in a convex end face as before described for retaining powdered flux for use in the arc welding operation.

It will be understood that the invention is not limited to the particular embodiments hereinbefore described and that the shape and disposition of the recesses can be modified in various ways within the scope of the appended claims.

What we claim is:—

1. A metal stud for attachment to a metal surface by electric arc welding or soldering, characterised in that the end portion of the stud has an end face of convex formation and is provided with a plurality of open recesses for accommodating flux, said recesses being distributed over said face and being of comparatively small cross-section so as to be capable of retaining flux in the form of loose powder.

2. A metal stud according to Claim 1, wherein the recesses are in the form of small cavities distributed over the convex surface.

3. A metal stud according to either of the preceding claims for attachment to a metal surface by electric arc soldering, wherein the convex end face is provided on an end portion of metal having a lower melting point than that of the body portion of the stud.

4. A metal stud according to Claims 1 and 3, wherein the recesses are provided by radially extending slots of the same axial dimension as the said end portion.

5. A metal stud according to Claim 1 or Claim 2, for attachment to a metal surface by electric arc welding, consisting of a single piece of metal having a convex end face in which said recesses are provided.

6. A metal stud for attachment to a metal surface by electric arc soldering, substantially as hereinbefore described with reference to Figs. 1 and 2 of the accompanying diagrammatic drawings.

7. A metal stud for attachment to a metal surface by electric arc soldering, substantially as hereinbefore described with reference to Figs. 3 and 4 of the accompanying diagrammatic drawings.

Dated this 30th day of December, 1954.

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1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

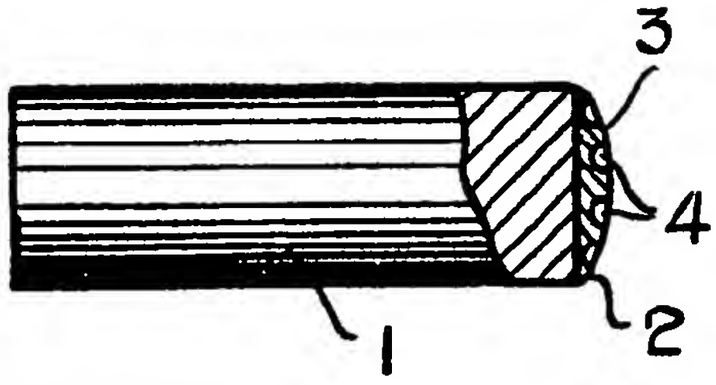

FIG.1.

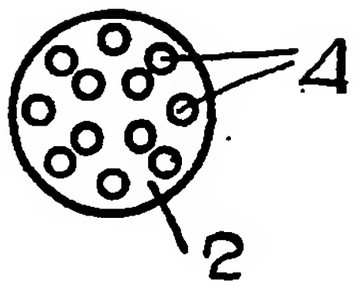

FIG.2.

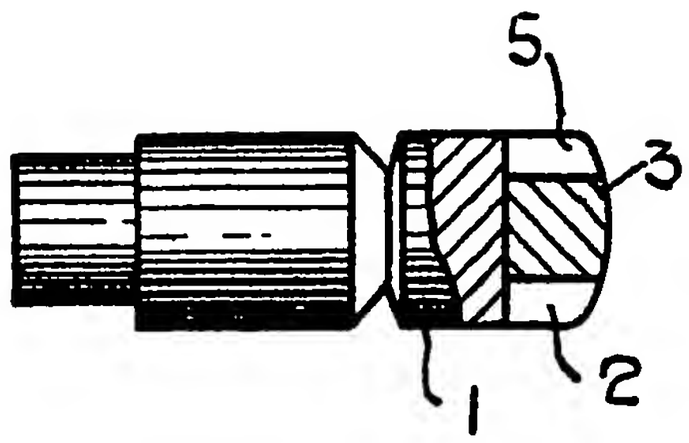

FIG.3.

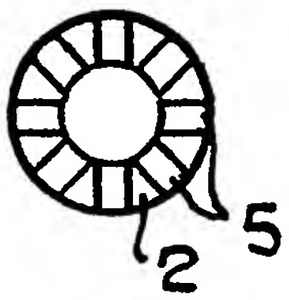

FIG.4.